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## CERTAIN CONDITIONS TO BE MET BY THE INSECT COLLECTOR, PARTICULARLY THE AMATEUR.

By Elbert S. Tucker, Museum Assistant in Systematic Entomology, University of Kansas, Lawrence.

ALL phases of work with insects hold a fascination to the true entomologist. The more difficult the part the more absorbing it becomes, but the most enjoyable feature lies in the collecting. Only a simple outfit is needed for collecting purposes—a net and a couple of poison bottles are usually sufficient—though a few other things which can be carried without trouble will prove useful at times. Provided with such light but effective equipment, what pleasure awaits the collector who is free to rove as he wills through fields and woodland, along streams and shores, or on mountain or plain, in search of coveted insect specimens. While some places are to be preferred above others in yielding results, yet, for such a matter, multitudes of different forms which appear during the warm months of the year generally abound close to one's own home, whether situated in town or country. Therefore, the collector can find much to inteaest him, ready at hand in most cases, wherever he happens to be.

Many persons who cherish a fondness for nature study are busily engaged by day in ordinary vocations, but still no excuse should be made for want of time to collect and study insects, to some extent, if desired, when holidays, vacations and various odd periods of leisure allow valuable opportunities, even if only a few minutes at a time. Besides, entomology as a field for investigation has an advantage over other branches of natural history on account of the great number of insects which fly at night, thus permitting the collection of specimens after daylight has fled. This privilege, which is most munificently afforded on summer evenings, proffers a delightful as well as instructive diversion from one's daily work.

The constant accumulation of specimens, little by little perhaps, here and there, by day or by night collecting, will soon reach proportions of which the amateur collector may justly be proud. In spite of all difficulties to be encountered in collecting, the amateur becomes assured that ample returns will compensate nearly every effort expended. Then an interesting display of material will invite study, provided the collector has exercised good judgment and practice in his efforts. His work, however, is not perfect without

careful and proper mounting of specimens, nor complete without explicit data.

Every definite locality that is given for the capture of a species is important in defining the extent of territory in which that species occurs, and such references, however local they may sometimes be, assist, often appreciably, in extending our knowledge of geographical distribution and in fixing the limits of their life zones. Next in value to the record of the locality in which an insect was taken was the date of capture; without these two most important particulars, the specimens are almost worthless. On the other hand, the records of further particulars learned from observation and experience, will render a collector's attainment of high scientific value.

The designation of captures made at night from those made in daytime seldom receives adequate attention, since far too little heed is given to the use of distinctive pin labels on which the data should be written or printed. The addition of the words it wilight," "at night," and "at electric light," on day labels, will answer most requirements for night collecting.

The triumph that affords the greatest satisfaction in the accomplishment of something worthy of commendation is achieved in the face of difficulties. Circumstances are frequently contrary to one's wishes; still a person need not be dismayed by interruptions nor deterred from a worthy purpose by unavoidable delays. Collecting can go on even if the work of determination lags. Portions of my own collections have been held fully fifteen years before the specimens were thoroughly identified.

A considerable extent of the systematic work in entomology lies beyond the skill, if not the time and facilities, of even the most experienced collector. But such difficulties, which especially face the amateur, are largely overcome through the generous assistance of specialists, who generally desire, in fact ofttimes request, selected material for research study. By taking advantages of these privileges, undetermined material may finally receive satisfactory attention. Without such recourse, the collector would be seriously hampered and likely refuse to collect or at least to save specimens which he could not readily identify himself within the limitation of his own resources. On account of the immense number of different forms of insect life, the specific or individual 'recognition of every kind of insect surpasses the ability of anytone person. Even specialization in a restricted group alone entails slow progress towards perfect identification of species. The interests of entomo-

logical science require the furtherance of mutual relations between collector and research worker, since one needs the other's help. In exchange for his duplicate specimens sent to one or more authorities, the collector learns the names of the species, or perhaps a greater part of them, when reported upon, which service, together with his collecting records, places him in possession of a fund of scientific information that might ultimately be embodied in respectable lists for publication.